K002888

OCT 2 0 2000

12.0 510(k) Summary

This summary of safety and effectiveness is being submitted in accordance with the requirements of SMDA 1990 and 21 CFR 807.92.

1. **Name of Manufacturer, Contact Person and Date Summary Prepared:**

Nichols Institute Diagnostics
33051 Calle Aviador
San Juan Capistrano, CA 92675
Phone: 949-240-5260
FAX: 949-240-5313
Contact Person: Jimmy Wong, Manager of Clinical and Technical Affairs
Date Prepared: September 6, 2000

2. **Device Name:**

Trade/Proprietary Name:	Nichols Advantage Thyroglobulin
Common Name:	Thyroglobulin Immunoassay, Tg Assay
Classification Name:	System, Test, Thyroglobulin

3. **Classification:** Class II
   Regulation Number: 866.6010
   Product Code: MSW, Immunology
4. **Predicate Device:** Nichols Institute Diagnostics Chemiluminescence Thyroglobulin
5. **Device Description:**
   The Advantage Thyroglobulin (NA Tg) contains sufficient reagents for 100 tests. The NA Tg is an automated Tg immunoassay assay for use on the Nichols Advantage Immunoassay System.

6. **Intended Use:**
   The Nichols Advantage® Thyroglobulin is an immunometric assay for the quantitative measurement of thyroglobulin in human serum. The assay is intended to aid in monitoring for the presence of local and metastatic thyroid tissue in patients who have had prior thyroidectomy (using surgery with or without radioiodine). This assay is also indicated for monitoring thyroglobulin levels in combination with radioiodine whole body scans after either rhTSH administration or thyroid hormone withdrawal for detecting presence of thyroid tissue in patients with well-differentiated thyroid cancer. The assay should only be used on patients who lack thyroglobulin autoantibodies.

   The presence of autoantibodies against thyroglobulin (TgAb) can interfere with assays for thyroglobulin; hence, the TgAb status of the patient should be determined and reported. Thyroglobulin antibodies can be quantitated with the Nichols Advantage® Thyroglobulin Autoantibodies assay (catalog 62-7024).

   The concentration of thyroglobulin (Tg) in a given specimen determined with assays from different manufacturers can vary due to difference in assay methods, reagent specificity, and presence of thyroglobulin autoantibodies. The results reported by the laboratory to the physician must include the identity of the Tg assay used. Values obtained with different assay methods cannot be used interchangeably. If in the course of serially monitoring a patient, the assay method used for determining Tg levels is changed, additional sequential testing should be carried out to confirm baseline values.

7. **Comparison to Predicate Device:**
   The Nichols Advantage Thyroglobulin (Y, NA Tg) is substantially equivalent to the Nichols Chemiluminescence Thyroglobulin kit (X, Tg ICMA). N=229 TgAb negative serum samples were used in a split sample method comparison study following the NCCLS EP9-A guideline. The Deming regression analysis shows $y=0.973x + 0.8$, and a Pearson correlation $r=0.98$, $p<0.0001$. The relative sensitivity using a cut-off of 2.0 ng/mL or greater was 99.4%. The relative specificity using a cut-off of 2.0 ng/mL or less was 100%.

8. Clinical Study

Patients (n=87) with a diagnosis of DTC were evaluated with the predicate method and the NA Tg assay. Using a cut-off of 2.0 ng/mL, the NA Tg gives essentially identical results as the Tg ICMA. The sensitivity and specificity of the NA Tg was 100% and 98.8%, respectively, while patients were on thyroid hormone suppression (THST). Recombinant human TSH administration was performed on these same patients while on THST. The sensitivity and specificity of the NA Tg was 89.5% and 97.1%, respectively, when rhTSH stimulated Tg testing was compared. Using McNemar's test, there were no significant differences between Tg results in this cohort.

9. Similarities:

- Intended use for each assay is identical. Both assays state interference due to thyroglobulin autoantibodies and give warning not to use the assay for patients with thyroglobulin autoantibodies.
- Both assays use specific antibodies to bind and capture thyroglobulin. Both assays use an immunometric approach to measure thyroglobulin in human sera.
- Both assays are standardized to the same CRM-457 Thyroglobulin Reference standard. Both assays report results in the same units - ng/mL.
- Both assays use the same detection methodology - chemiluminescence labeled Anti-Tg monoclonal antibodies.
- The analytical performance is comparable between methods.

10. Differences:

The following differences pertain to differences in immunoassay technology and do not affect the intended uses of each device.

Feature	Tg ICMA	NA Tg
Sample Size	200 uL serum	250 uL serum
Solid Phase	Avidin-coated bead Biotin-polyclonal goat anti-Tg used for capture	Avidin-coated magnetic particle Biotin coupled to two different monoclonal anti-Tg antibodies.
Incubation: Temperature:	16-24 hours @ 180 rpm room temperature	Approximately 40 minutes 37°C
Reportable Range	0.5-100 ng/mL	0.9-500 ng/mL

11. Comparison of Performance Characteristics

Feature	Tg ICMA	NA Tg
Sensitivity	Analytical = 0.07 ng/mL Functional = 0.5 ng/mL	Analytical =≤ 0.2 ng/mL Functional = ≤0.9 ng/mL
Intra-Assay Precision (%CV)	3.6-6.4 %	3.9-6.0%
Inter-Assay Precision (%CV)	5.0-22%	5.8-23%
Recovery	94.2-107.5%	92-108%
High Dose Hook Claim	Up to 1,000 ng/mL	none
Specificity ND = none detected	TSH @ 5,000 uIU/mL = ND T3 @ 2,000 ug/dL = ND T4 @ 40 ug/dL = ND	TSH @ 6,000 uIU/mL = ND T3 @ 30,000 ng/dL = ND T4 @ 8,000 ug/dL = ND Calcitonin @ 3000 pg/mL = ND
Interference Studies: [Percent recovery]	Hemoglobin @500 mg/dL = 93% Bilirubin @ 20 mg/dL = 98% Triglyceride@3694 mg/dL=103%	Hgb @ 600mg/dL=101-103% Bilirubin @ 30 mg/dL = 90-96% Trig. @4000mg/dL = 100-105%

Conclusions: These data, which were provided to FDA, demonstrate safety and effectiveness of the Nichols Advantage Thyroglobulin for the intended in vitro diagnostic use. Furthermore, based on performance characteristics, the Nichols Advantage Thyroglobulin assay is substantially equivalent to the predicate method.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

OCT 2 0 2000

Mr. Jimmy Wong
Manager, Clinical and Technical Affairs
Nichols Institute Diagnostics
33051 Calle Aviador
San Juan Capistrano, California 92675

Re: K002888
Trade Name: Nichols Advantage Thyroglobulin
Regulatory Class: II
Product Code: MSW
Dated: September 13, 2000
Received: September 15, 2000

Dear Mr. Wong:

We have reviewed your Section 510(k) notification of intent to market the device referenced above and we have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (Premarket Approval), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 895. A substantially equivalent determination assumes compliance with the Current Good Manufacturing Practice requirements, as set forth in the Quality System Regulation (QS) for Medical Devices: General regulation (21 CFR Part 820) and that, through periodic QS inspections, the Food and Drug Administration (FDA) will verify such assumptions. Failure to comply with the GMP regulation may result in regulatory action. In addition, FDA may publish further announcements concerning your device in the Federal Register. Please note: this response to your premarket notification submission does not affect any obligation you might have under sections 531 through 542 of the Act for devices under the Electronic Product Radiation Control provisions, or other Federal laws or regulations.

This letter will allow you to begin marketing your device as described in your 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801 and additionally 809.10 for in vitro diagnostic devices), please contact the Office of Compliance at (301) 594-4588. Additionally, for questions on the promotion and advertising of your device, please contact the Office of Compliance at (301) 594-4639. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its internet address "http://www.fda.gov/cdrh/dsma/dsmamain.html".

Sincerely yours,

Steven Gutman

Steven I. Gutman, M.D., M.B.A.
Director
Division of Clinical Laboratory Devices
Office of Device Evaluation
Center for Devices and Radiological Health

Enclosure

4.0 Indications For Use Statement

INDICATIONS FOR USE STATEMENT

510(k) Number: K002888

Device Name: Nichols Advantage Thyroglobulin

Indications for Use Statement: The Nichols Advantage® Thyroglobulin is an immunometric assay for the quantitative measurement of thyroglobulin in human serum. The assay is intended to aid in monitoring for the presence of local and metastatic thyroid tissue in patients who have had prior thyroidectomy (using surgery with or without radioiodine). This assay is also indicated for monitoring thyroglobulin levels in combination with radioiodine whole body scans after either rhTSH administration or thyroid hormone withdrawal for detecting presence of thyroid tissue in patients with well-differentiated thyroid cancer. The assay should only be used on patients who lack thyroglobulin autoantibodies.

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Concurrence of CDRH, Office of Device Evaluation (ODE)

Peter E Maglin

(Division Sign-Off)
Division of Clinical Laboratory Devices K 002888
510(k) Number

Prescription Use ✓ **Or** **Over-The-Counter Use**
(Per 21 CFR 801.109) **(Optional Format 1-2-96)**